

and a single *Bombycia riminalis* were taken from the ragwort, where also *Apamea secalis* (*oculea*) and *Caradrina quadripunctata* were common. *Amoebe olivata* was abundant in the glens but in very poor condition, *Lygria testata*, was common on the moors, and two or three *Coremia designata* of a very small form were taken, but the insect of the locality at this time of the year is certainly *Cidaria immanata*, which occurred all over the district and exhibited an almost endless range of variation. *Polia chi* was taken from the walls, *Peronea caledoniana* and *P. aspersana* were common, *Scoparia cembrae*, *Pionea lutealis*, *Argyresthia semites-tacella* and a single *Pionea ferrugalis*, and a few *Crambus pinellus* were taken.

September 5th. I had an afternoon at Irvine. A single *Aglais urticae* was found on a thistle. *Thera obeliscata* (*variata*) was disturbed in some numbers from the pines in fine condition and very variable. Several *Depressaria nerrosa* and *Peronea schalleriana* were taken. On September 8th *Peronea variegana* and single *Tortrix unifasciana* and *Ochsenheimeria bisontella* were boxed from a fence in Pollokshields. On the 12th I tried to obtain a few *Phibalapteryx lapidata* on the Lanarkshire Hills, but rain coming on just at the time of flight, I was forced to abandon my search and make for the station. Only a single specimen was obtained, along with a few *Tapinostola fulva* and *Celaena haworthii*.

October 3rd. *Thera obeliscata* (*variata*) was still to be taken in good condition at Johnstone. On the 24th, an afternoon at Whistlefield produced *Oporabia dilutata* in some numbers. Several *Cerostoma radiatella* and a single *Cidaria siderata* were shaken from foliage, and a single *Peronea mixtana* was netted on the hillside.

November 7th. A fine afternoon at Milngavie, where over a dozen *Chaematobia boreata* were taken, *Cerostoma radiatella* and *Peronea ferrugana* were common, and two dark ♀s of *Oporabia dilutata* were obtained from oak. And on the 21st, though it was a frosty afternoon, *C. boreata* and *C. radiatella* could still be taken there.

New Myrmecophilous Aphides.

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The following are descriptions of some new species of *Aphidae* found in ants' nests. With the exception of two (*Aphis leontodoniella* and a *Macrosiphum*) they were collected by Mr. Donisthope, and found amongst the large number of Myrmecophilous plant-lice that he has sent me. This collection also included several unknown stages of some previously described species and enabled me to trace the complete life-cycle of some, notably of *Anoecia corni*, Fabricius, which is a serious pest to wheat and other cereals, as well as grass, in parts of Europe, and which seems to be one of the commonest Myrmecophilous species, the ants appearing to look after the oviparous females and the eggs just as they do those of *Aphis maidisradicis*, Forbes, in America.

TRAMA DONISTHORPEI, nov. sp.

Apterous viviparous female. Head, thorax, antennæ, and legs dark; abdomen

paler with dark lateral spots and dusky cross-bars, broken posteriorly by a median pale line. Antennæ of six segments, the two first segments nearly equal in length, but the basal one wider, the third the longest, about as long as the fourth and fifth, the fourth shorter than the fifth, fifth and sixth equal; the third has twelve sensoria on the apical two-thirds, the fourth five to six sensoria, the fifth three and a large sub-apical one, the sixth three basally, then a group of three small ones, and then two close to the large one beneath the "nail," which has one small one; hairs long as in *troglodytes*, "nail" longer than in the latter. Eyes large, black. Body hairy. Head hairy with a marked median suture. Segments of the thorax markedly distinct, especially the pronotum. Cauda short, rounded, with rather long hairs. Cornicles slightly elevated, with large circular openings. Proboscis long, reaching well beyond the third coxæ, apex dark. The hind tarsus much more than half the length of the hind tibia; both are very hairy, but the hairs are scantier on the tibiæ; posterior trochanters large. A distinct stemma above each eye, the latter with a distinct ocellar process.

Length. 3mm.

Locality. Blackgang Chine, Isle of Wight, 26 viii. 1913 (Donisthorpe).

Observations. Found in an ant's nest (*Tetramorium caespitum*).

I think that this insect must be placed in *Trama*. It differs from *T. troglodytes*, first in general colour, secondly in the marked antennæ, and thirdly in the hind tarsus. The marked ocellar process below the eyes is very characteristic. It may be pointed out here that I have always found a minute basal segment to the long hind tarsus in *troglodytes* as well as in this species.

FORDA HEXAGONA, nov. sp.

Apterous viviparous female. Globular in form, somewhat flattened behind. Head flat and broad, slightly rounded at the sides; the integument prominently marked with hexagonal sculpturing, which also passes on to the pronotum, a few short curved hairs in front. Antennæ of five segments, rather more than $\frac{3}{4}$ the length of body: basal segment much broader and a little shorter than the second, which is cylindrical; third segment the longest, about as long as the fourth and fifth together; fourth swollen towards the apex where there is a single sensorium; fifth a little longer than the fourth, with a prominent blunt nail, one large and four small sensoria at its base; the third to fifth segments with a few markedly capitate hairs, only slightly so on the two basal segments. Eyes small but prominent, black. Rostrum reaching to the base of the third pair of legs. Legs dark and antennæ appear darker than the body, the legs with scanty hairs. Cauda very dark, with numerous short, pale hairs.

Length, 1.5mm.; *breadth* 1mm.

Locality. Whitsand Bay, Cornwall, iv. 1909 (Donisthorpe).

Observations. I have only seen one specimen found in the nest of *Formica fusca*. It had been preserved in alcohol so I cannot give its colour. The marked hexagonal sculpturing separates it from the other species of *Forda*.

FORDA FURCATA, nov. sp.

Apterous viviparous female. Pearly to creamy-white; domed; segments marked; legs pallid, tarsi dusky. Antennæ pallid, but darkened at the tips; rostrum pale, brown on the last segment, broad, reaching past the second pair of legs; vertex broad, slightly rounded. Antennæ moderately long, of five segments; the first two small, about equal in size; the third the longest, as long as fourth and fifth together, showing a slight constriction near the apex; the fourth slightly longer than the second, the fifth nearly twice as long as the fourth, all the segments with rather long simple hairs; the fourth with a single sub-apical sensorium, the fifth with one large and several small sensoria just below the short "nail." Eyes very small, reddish, represented by 3 ocelli. Legs rather short, with dark tarsi, with numerous rather stiff hairs on all the segments. Hairs on the head both

simple and *furcate*; on the body some are more broadly expanded apically, others slightly capitate; cauda pale, rounded, with four long pale hairs and some median shorter ones, notched at the sides, and from each notch arises a long hair.

Length. 1.5mm. to 2mm.

Locality. Sandown, Isle of Wight, 24 viii. 1908 (Donisthorpe).

Notes. Described from two ♀s taken in the nest of *Myrmica laevinodis*. It can at once be told by the form of the hairs. The antennal structure certainly places it in *Forda*, and approaches that of *F. viridana*, Buckton. The siphon openings are quite level with the body.

APHIS ALIENUS, nov. sp.

Apterous viviparous female. Bright emerald green. Eyes large, dark. Antennæ shorter than the body, of six segments, the fifth dusky at the apex and all the sixth; first segment broader and slightly longer than the second; the third longer and narrower than the second; but often not quite as long as the fifth; the fourth about one-third the length of the third, and about equal to the length of the first two; fifth slightly longer than the third, up to the long "nail," about as long as the fourth; the first and second slightly darker than the third and base of the fourth; the fourth and fifth markedly imbricated, the third on the apical half only; edges serrated, a few scattered hairs on all the segments. Proboscis dark at base and apex, reaching to the third coxa. Prothoracic ring with blunt lateral processes. Abdomen with one lateral blunt papilla on each side, between the second and third pairs of legs and another between the cornicles and cauda. Cornicles rather short, black, thick, expanded basally, marked with dotted lines instead of true imbrication, about as long as the cauda, which is dusky especially at the apex. Legs moderately long, especially the hind pair, the tarsi and apices of the tibiæ dusky; femora with a few hairs; tibiæ with many; last tarsal with serrated edges and markedly imbricated. A large, marked papilla on each side of the cauda, between it and the cornicles. Penultimate segment of the rostrum swollen.

Length. 1mm. to 1.3mm.

Locality. Seaton, South Devon, 2 viii. 1912 (Donisthorpe); Whit-sand Bay, Cornwall.

Observations. Found in the nests of *Lasius alienus*.

It is one of the smallest Aphides I have seen. It approaches Walker's *Aphis subterranea*, but can at once be told by having antennæ composed of five, not six, segments in the apterous female; the cornicles are also relatively longer and of different shape being much expanded basally, they are also black whilst in *subterranea*, they are only black at the tips. The antennæ and legs are also thinner than in Walker's species. Nor is it Koch's *Aphis carrotæ*, which Buckton and others take to be *subterranea*, for Koch's species has a dark head and dark cauda and also antennæ of six segments and shorter cornicles. I have not found alate of *Aphis carrotæ*, but judging from the apteræ it is distinct from *subterranea* and the one I describe here.

APHIS LEONTODONIELLA, nov. sp.

Apterous viviparous female. Very pale yellowish-green all over. Eyes large, deep black, edged with red. Head with a depression on each side, raised in the centre, with numerous longish pale hairs. Antennæ pallid, thin, half the length of the body, of six segments, the basal one large and broad, the second narrower and slightly shorter, the third long, but not as long as the sixth; the fourth rather more than half the length of the third, the fifth slightly shorter to nearly as long as the fourth, longer than the basal part of the sixth, which has a very long thin "nail"; all segments with prominent long thin pale hairs; a sensorium near apex of fifth and some faint ones at the base of the "nail," which is markedly striate and serrated at the edges. A distinct large rounded process on each side of the pronotum and five smaller ones on each side of the abdomen, which has very small,

blunt spine-like processes all around and some longer hairs. Cauda pale, rounded, with minute, dense, blunt spines and longer hairs. Anal plate rounded and similarly adorned. Cornicles very pale, moderately long, showing faint imbrication and fine serrated edges. Legs, including the angues, very pale, hairy, with the apex of the tibiæ projecting on one side in a short, sharp process. Proboscis pallid, reaching beyond the third coxæ.

Length. 1·8mm.

The *nymph* is very similar but the cornicles are slightly longer; the wing pads are pallid and semitransparent.

Locality. Wye, 27 x. 1911 (Theobald).

Observations. Found in the nest of *Lasius flavus* and also feeding on dandelion roots. I found many apteræ in both situations, but when I searched for them some ten days later, none could be found; as the nymphs were appearing on the 27th, probably they had all become winged and fled. It is possibly the ground form of some other described species, but I have named it provisionally. The ants were watched "milking" the females whilst they were sucking the sap from the dandelion roots.

MACROSIPHUM FORMICARIUM, nov. sp.

Alate viviparous female. Head dark brown. Antennæ much longer than the body; basal segment brown, much longer than the second, which is pale, rest of antenna dark brown, except just the base of the third; third segment a little longer than fourth, with about 20 sensoria over about two-thirds of its length; fourth segment longer than fifth, which has a large sub-apical sensorium; hairs scanty, rather long and stiff. Eyes black. Proboscis pale, black at the apex, reaching to the second coxæ. Thorax dark. Abdomen pale with dark lateral spots from which arise longish hairs from distinct tubercles; over the rest of the abdomen also arise straight stiff hairs from pale tubercles. Cornicles very long, cylindrical, slightly swollen at the base, dark, except just at the base, reticulate for the greater part of their length, markedly imbricated near the base, which is unadorned. Cauda large, bluntly lanceolate, pale with three large pale hairs on each side and two median sub-apical ones. Legs moderately long, pale yellowish-green with dark areas at the apices of the femora and tibiæ and dark tarsi; rather long, stiff hairs on the femora and tibiæ. Wings ample, with brown veins, pale brown stigma and pale insertions.

Length, 2·3mm; *wing expanse,* 7mm.

Locality. Lundy Island, 9 vi. 1913 (Donisthorpe).

Observations. Described from a single specimen taken by Mr. Donisthorpe in a nest of *Lasius flavus*. The cornicles are very long, and peculiar in that they are reticulate over nearly their whole length; the stiff hairs on the body are also characteristic. As the specimen had been for some time in spirit, it is not possible to give the actual coloration. Koch describes an underground *Macrosiphum* as *Siphonophora subterranea*, but this species has shorter cornicles and a black cauda.

I have received two other species of *Macrosiphum* from ants nests, but both too damaged to describe. One was an apterous female of a uniform pale colour, with black eyes; long, thin, straight, imbricated pale cornicles; cauda long, uniform and pale. Tarsi dusky. Length, 2·3mm. Taken by Donisthorpe in a nest of *Lasius niger* at Rossbeigh, Co. Kerry, in June, 1902.

The other was sent to me by Mr. Britten, taken "in ants' nest at Great Salkeld, Penrith."

I think these are the only records of this genus being found in ants' nests.